---DRAFT Cover letter —FOR DISCUSSION PURPOSES ONLY --

December 13, 2012

Mr. Bob Wyatt
Chairman
Lower Willamette Group
c/o Northwest Natural
220 NW Second Avenue
Portland, Oregon 97209

RE: Portland Harbor Superfund Site, Administrative Order on Consent for Remedial Investigation and Feasibility Study: Docket No. CERCLA-10-2001-0240
EPA Comments on the *Portland Harbor RI/FS Draft Feasibility Study* (March 30, 2012)

Dear Mr. Wyatt:

EPA and its partners have reviewed the *Portland Harbor RI/FS Draft Feasibility Study* (FS), dated March 30, 2012, and submitted to EPA by the Lower Willamette Group (LWG). This letter provides EPA's initial and general comments on the draft FS report. EPA's project partners also contributed to these comments.

The draft FS Report is a substantial body of work that provides many useful tools and technical evaluations. The technical analysis in the draft FS can, with supplemental analysis and revisions, be used to support EPA's evaluation of remedial alternatives. The draft FS provides a reasonable range of remedial action alternatives for the detailed and comparative evaluation of alternatives. The mapping of locations and concentrations in the sediments of key contaminants of potential concern (COPCs) that exceed preliminary Remedial Action Levels (RALs) will be useful in providing a preliminary identification of the Sediment Management Areas (SMAs.)

At this time, however, EPA the draft FS is not adequate for its intended purpose and is not approved by EPA. The report has many deficiencies and needs substantial revision in order to fully support EPA's evaluation of alternatives and provide an adequate basis for remedial decision making at the Portland Harbor Site. Below is a list of some of the key areas of concern identified by EPA and its partners to date that must be addressed to have an approvable document.

To move the revision of the FS more quickly, EPA will perform an independent evaluation and comparison of the alternatives presented in the draft FS. Given the extensive nature of our concerns EPA believes the most expeditious way to finalize the FS is for EPA to draft significant portions of the revisions to the draft FS, with considerable support from the LWG on technical evaluations, cost evaluations, revising tables and figures, etc. EPA intends to work cooperatively with the LWG in completing the FS and expects that revisions to the FS by both parties will be shared for review and comment as they are developed in order to proceed in an iterative manner.

EPA will only be providing detailed comments on the portions of the draft FS that we will require the LWG to revise or perform more analysis. General areas of concern on the draft FS

are therefore noted in this letter and the attached comments, but specific requests to LWG will be provided under separate cover throughout the revision process.
In keeping with the shared goal of completing this document in a timely manner, we will work with the LWG to develop a process and schedule for revising this document that targets November 2013 as a completion date for the FS.Key areas of concern identified by EPA and its partners include the following:

Text, Figures and Presentation

There are many instances where the text is confusing and key information is not presented in a clear and usable manner. For example, the scale used in some figures (e.g., Appendix Fa figures that present the River Mile SWAC vs. Area Remediated results for time T=0) makes it difficult to differentiate between the alternatives. In other cases the assumptions used in some of the evaluations are not clearly stated in the document. There is also too much advocacy in some sections of the report that obscures the straightforward presentation of information. Please note that our lack of detailed comments on the text and figures in this initial comment set should not be construed to imply that we are in agreement with the text. EPA expects to work with LWG to revise figures and text in the document to correct these problems.

Fate and Transport Modeling and MNR

EPA has identified many concerns related to the MNR modeling and conclusions and has provided more detail in the attached comments. In the broadest terms, EPA accepts the general precepts but not the outcome of the MNR modeling effort, including the results and the model's supporting conclusions. The US Army Corps Engineer Research and Development Lab recently performed independent model runs linking deposition to hydrodynamics. Based on the Corps modeling runs it appears there is sufficient uncertainty in the LWG model results to conclude that the long-term projections provided in the draft FS do not accurately predict depositional rates for many areas in the lower Willamette River that are of concern for this remedial action.

Since we have the Corps model results, EPA at this point intends to use the empirical and both the Corps and AnchorQEA modeled results to support the evaluation of alternatives rather than request revision of the Anchor QEA model runs to address specific concerns.

Principal Threat Material and Hot Spots

EPA does not agree with the results of the analysis that LWG has provided which ultimately avoids designating any sediment at the site as Principal Threat Material (PTM) as defined by EPA guidance or Hot Spots as defined by the State of Oregon.[1] The overall intent of EPA's guidance and Oregon's regulations is to ensure that there is a preference for the treatment or removal of those materials with high concentrations, or that are highly mobile, or that may not be reliably contained.

[1] ORS 465.315(2)(b)(A) and OAR 340-122-0115(32)(b)

Another omission in the FS is the lack of any meaningful analysis of PTM in accordance with the NCP and CERCLA guidance. EPA guidance defines PTM as a source material that is "highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur," such as drummed waste or pools of non-aqueous phase liquids (EPA 1991). Based on this definition, the Portland Harbor FS should clearly acknowledge that the documented presence of non-aqueous phase liquids in sediments off shore of the Gasco and Arkema sites indicates that PTM is present at the Portland Harbor Site. Additional analysis of PTM must be conducted as part of the revised FS.

In addition, while some of the LWG's arguments in the draft FS regarding Hot Spot designation have merit, DEQ is still concerned that: 1) an attempt to identify high concentration Hot Spots in Portland Harbor has not been done; 2) high concentration Hot Spots may exist in Portland Harbor; and 3) some of those Hot Spots may not be covered by active remediation included in current remedial alternatives.

The FS must identify any additional high concentration Hot Spots in Portland Harbor in accordance with Oregon regulations. While the LWG's FS strategy may approach the intent of the Hot Spot rules, it does not answer the question of whether high concentration Hot Spots as defined in Oregon regulations exist. If high concentration Hot Spots actually exist outside of areas identified as PTM or currently designated for active remediation, then the very important state ARAR for preference for treatment will not be addressed. As has been stated in the past, DEQ is willing to work with the LWG to develop a reasonable approach for identifying high concentration Hot Spots, and then participate in decisions of how to address potential Hot Spots in the FS.

Site-Wide vs. Relevant Exposure Areas

The draft FS and LWG's public presentations on the draft FS clearly emphasize a site-wide approach with respect to surface-weighted average concentration calculations (SWACs), and phenomena such as deposition and receptor exposures. Contaminant sources and types are not homogeneous site-wide, and most exposures are not site-wide, yet the draft FS frequently focuses analyses and presents conclusions at the site-wide or river mile scale. For example, "the site is depositional" is frequently repeated despite the fact that many areas of the site are subject to erosion due to natural (e.g., high flow events) or anthropogenic (e.g., prop wash) causes. That assertion is not relevant or helpful to determining remedial response actions for individual areas, where remedial actions will occur. Combining exposure areas (i.e., site-wide, segment-wide, or to the river mile) is not environmentally or biologically relevant for many receptor exposure scenarios, and effectively dilutes the calculated risks and appearance of unacceptable exposures. As stated in previous EPA comments, the draft FS analyses must focus on contaminated areas at exposure scales consistent with contaminant distribution in addition to site-wide analysis.

EPA disagrees with the LWG's assertion in the alternatives analysis that all alternatives (B-F) meet seven of the NCP nine criteria because the agency asserts that site-wide surface-area weighted average concentrations (SWACs) are not appropriate at this site.

The use of site-wide SWACs to achieve remedial goals allows substantial spatial areas with higher and potentially problematic levels of contamination to be masked by areas with lower contamination. EPA also disagrees with the LWG NCP criteria analysis' overreliance on the MNR evaluations for the reasons discussed above and in the attachment.

Dredging

EPA has significant issues with the evaluation of dredging-based remedies in the draft FS which underestimates the overall effectiveness of such remedies. The evaluation of dredging in the draft FS overemphasizes the short-term impacts of dredging-based remedies, underestimates the effectiveness and implementability of sheet pile enclosures and overestimates the length of time needed to complete dredging work for many alternatives. The long- and short-term effectiveness of dredging must be evaluated using more realistic assumptions about effectiveness of dredging controls and duration, based on the experience at other sites around the country.

The draft FS assumption that the extensive dredging inherent in the more aggressive remedies, such as Alternative F, will take up to 28 years to implement, is not well supported by existing information and is overly biased. The draft FS schedules are driven by assumptions of equipment availability, construction rates and seasonal dredging restrictions which results in limiting the amount of work that can be completed in a calendar year. However, no attempt was made to consider higher estimates of production rates and longer in-water work windows if engineered controls were applied to separate river receptors from dredging areas. Such other dredging controls and scenarios must also be evaluated to provide information that could be the basis for seeking federal and state agency support for adjusting fish windows so that remediation could proceed more rapidly to achieve the benefit of removing contaminants from the river.

Appendix E - Sensitivity Analysis (Ecological and Human Health)

EPA rejects the uncertainty analysis in Appendix E. EPA has significant policy and technical concerns with the assessment, and the fact that the conclusions drawn from the assessment also permeate the text and presentations in many sections of the main report.

The text in Appendix E is written to give the erroneous impression that the sensitivity analysis was either required by EPA guidance or was conducted "consistent with EPA guidance." However, the sensitivity analysis in the draft FS is not consistent with EPA guidance. A detailed discussion of uncertainties associated with the exposure values used in the BHHRA is already presented in that report, including a quantitative estimate of the magnitude of the uncertainties on the overall risk estimates. Further, inconsistent with the guidance cited in this appendix, no work plan was submitted to EPA for review and concurrence, and the probabilistic reanalysis of the exposure assessment presented here ignores the recommendation in Section 5.2 of RAGS Volume III that "if only point estimates were used in the risk assessment, probabilistic methods should not be used for PRG development."

Another example of the technical deficiencies with the analysis is the LWG has mischaracterized/misinterpreted the fish consumption rates as used in the BHHRA of 17.5 g/day and 142 g/day as upper percentiles (90th and 99th) for consumers of fish. This mischaracterization of consumption rates as upper percentiles for fish consumers instead of median values has profound implications in the analysis. In a probabilistic evaluation, about one half of the values are expected to be above the 50th percentile, and one half of the values below the 50th percentile. Additional detail on this concern is provided in the attached comment table.

Scoring and weighting of factors for comparative analysis of alternatives

EPA disagrees with the scoring and weighting of criteria in the comparative analysis of alternatives as applied in the draft FS. For example, the comparative evaluation of alternatives overemphasizes duration of cleanup in the evaluation of short term impacts associated with active remediation, while underemphasizing the effects of delaying substantial risk reduction associated with long MNR timeframes. The evaluation did not adequately consider methods to reduce short-term impacts such as alternate sequencing and engineering controls.

EPA will be evaluating various combinations of technologies in addition to those "packaged" as alternatives B through G in the draft FS. For example, alternatives C though F all include various combinations of CDFs for disposal. Alternatives with similar RALs should have been evaluated assuming off-site disposal of all dredged sediment to provide a basis for comparison with the combinations presented in the draft FS. Construction sequencing options also should have been developed that prioritize risk reduction, consider greater flexibility in estimated work windows, and greater efficiencies in production. The rationale behind the sequencing of construction presented for many of the alternatives is not clearly presented, particularly for removal options. While the draft FS provides many of the tools necessary to perform these evaluations, additional technical evaluation will be necessary to conduct the comparative analysis of alternatives.

In summary, while the draft FS provides useful information and tools to assist EPA in the selection of a remedy at the Portland Harbor site, key elements needed for EPA to select a remedy are inadequate, as described above or in more detail in the attached comment list. As a result, EPA has determined that major modifications to the document are needed before EPA can select a remedy for this site. EPA is continuing to review the information presented in the draft document and conducting an independent evaluation of cleanup alternatives and supporting information needed for making cleanup decisions for the Portland Harbor Site. EPA will be considering more realistic assumptions about the overall effectiveness of dredging, the length of time that in-water remediation will take, the uncertainties of MNR effectiveness, and the spatial scale of the assessment. The revised FS will also need to reflect the conclusions and results of the final BHHRA and BERA. EPA will be providing additional detailed comments and

direction concurrently with its independent analyses such that LWG can provide additional information and responses to EPA concerns during this period of review and revision.

We look forward to working with the LWG on revisions to the document that will be needed to support EPA's proposed cleanup plan for the Portland Harbor Site. We would be happy to meet with the LWG's project managers in the near future to discuss EPA's process for completing the draft FS, including next steps and our vision for completing the work. If you have any questions, please contact Chip Humphrey at (503) 326-2678 or Kristine Koch at (206) 553-6705. For legal questions, please contact Lori Cora at (206) 553 1115.

Sincerely,

CH & KK